The endemic and variable tarweed *Hemizonia clementina*. Photographs by Mark Hoefs.

The Wrigley Memorial Botanical Garden

TEDDY COLBERT, *Los Angeles*

If it is not, as it is believed to be, the only botanical garden of its kind, the Wrigley Memorial Botanical Garden on Santa Catalina Island is certainly among the most significant. The usual purpose of a botanical garden — that of procuring, caring for and displaying alien plants for study — is here reversed and the endemic plants of the island are preserved and displayed, along with those of the other fifteen offshore California islands. The aim is to have all the plants that grow naturally on one island or group of islands, in a natural and comprehensive setting. There are approximately one hundred species, subspecies and varieties of plants believed to grow naturally on the California islands and nowhere else. They will grow again as they

The wild tomato, *Solanum wallacei* subsp. *wallacei*

once did, in their own marine climate and be accessible for the appreciation of casual visitors and for study by scientists.

The idea for this botanical garden may have its origin in the ball park. William Wrigley Jr., who acquired the Wrigley Field in Chicago for his baseball team, the Chicago Cubs, spurned billboards, Astroturf and artificial lighting in favor of a more natural setting. The ivy covered walls there, planted in 1937, remain as evidence of three generations of the family's preference for plants over the more usual commercial clutter.

In 1919 William Wrigley Jr. purchased the Santa Catalina Company, but horticulturists had already been searching the world for plants that would thrive on the island. Rows of eucalypts on precipitous shore-line drives are the result of those early efforts, as are the palms along the waterfront of Avalon, the island's only town.

After William Wrigley Jr.'s death in 1932, his wife asked horticulturist Albert Conrad of Pasadena to plan a cactus and succulent garden on the thirty-eight acres of Avalon canyon, the site of his memorial. In 1969 their son Philip K. Wrigley began improvements in the garden with the object of making it a botanical preserve. He also protected it by creating the non profit Wrigley Memorial Garden Foundation and funded it with shares of Wrigley Company stock.

In the early 1970s horticulturists, taxonomists and naturalists worked with architects to crystalize ideas and present a working plan. Among the first consultants was the late Percy C. Everett, former superintendent of the Rancho Santa Ana Botanical Gardens in Claremont. His longterm study of Santa Catalina native plants was of great value, but he also contributed ideas which added to the beauty of the scheme.

Together with Douglas Propst, naturalist and president of the Catalina Island Conservancy, Mark Hoefs, director of the Garden and vice president of the Wrigley Memorial Garden Foundation, and taxonomist Robert F. Thorne, a plan was prepared which reflects the great interest of the scientific community in the endemic flora of the California islands. The Wrigley Memorial Garden became reliquary for the island endemics in addition to the original desert plants.

When Philip K. Wrigley died in 1977 plans for the botanical garden had gained public support and recognition, and his son William Wrigley continues to provide family backing.

Endemic plants being collected in the garden fall into two broad categories; the abundant and distinctive relict endemics which once proliferated on the mainland but now grow naturally only on the islands and the rarer autocthonous endemics which evolved on one or more of the islands. (The word autocthonous is derived from a Greek word meaning "to have sprung from the world he inhabits.")

Ironwoods, elegant ornamental trees with distinctive leaves, provide examples of relict endemics.

Fossil plants of the genus *Lyonothamnus* (ironwood) have been found near Death Valley, California and Nevada. *Lyonothamnus* is believed to have thrived in many areas of the southwestern United States in Neogene time (26,000,000 to 2,500,000 years ago) but is now limited to the larger California islands.

Other plants are believed to have evolved in isolation on the island of Santa Catalina itself. One such plant is the wild tomato *Solanum wallacei* subsp. *wallacei*, which has large violet-blue flowers, purple-black poisonous berries and dense and sticky foliage. Other islands have their own versions of the plant. On Santa Rosa and Santa Cruz islands there is one with smaller flowers, yellow berries and less sticky leaves called *Solanum wallacei* subsp. *clokeyi*. A third version found on Guadalupe Island has characteristics of each of the others, but is distinct from both.

The existence of these variations in the wild tomato supports the concept of autocthony and suggests that evolution in isolation has accelerated the development of species and subspecies by limiting opportunities for the introduction of divergent characteristics.

Shrubby tarweeds (*Hemizonia clementina*) also illustrate development in isolation by displaying variations of form, flower, size and hairiness of leaf on Anacapa, Santa Bar-

bara, San Nicolos, San Clemente and Santa Catalina islands.

Santa Catalina's own dudleya, *Dudleya hassei*, colonizes perpendicular cliffs near Lover's Cove, where foraging animals cannot reach it. In summer it has rosettes of silvery leaves, but after winter rain the leaves are green and pink stems support numberless yellow star-like flowers.

Dudleya nesiotica, on Santa Cruz Island, also changes color under stress. In this case the change is from green to red.

One of the most delightful phenomena on the islands is the tendency to continuous flowering. The wild apple, *Crossosoma californicum*, is named for its apple-blossom-like flowers that hint at unending spring. It grows naturally on Santa Catalina and San Clemente islands. Two plants of it were recently found also on Palos Verdes Peninsula — a former island — but these sites are probably the extent of its distribution.

Tree poppies on the islands also have long periods of flowering. At the Rancho Santa Ana Botanical Garden in Claremont, California, they have been compared with the mainland tree poppy *Dendromecon rigida* subsp. *rigida* and found to be superior in several respects. The island tree poppies, *Dendromecon rigida* subsp. *rhamnoides* and *D. rigida* subsp. *harfordii* not only flower over a longer period than their mainland relative, but have larger flowers and broader leaves also. *D. rigida* subsp. *harfordii*, from Santa Cruz and Santa Rosa islands is now available in nurseries.

Because temperatures are modified by the ocean, the growing season is extended and the conspicuous phenomenon of gigantism, or woodiness, results.

St. Catherine's lace (*Eriogonum giganteum* subsp. *giganteum*) which carries the translation of the Spanish name for its island home, Santa Catalina, is a woody plant much larger than the mainland species. Dr. Robert Thorne has recorded a specimen twelve feet in height with a trunk five inches in diameter. From creamy white flowers of spring to the russet-brown seed pods of fall, St. Catherine's lace has a long and varied season of beauty.

Sexual reproduction allows for variation between offspring, a mechanism tending towards adaptation and survival in conditions that might threaten extinction for plants (and animals) in certain circumstances. Cross pollination, by mingling the characteristics of different individuals, generates greater variability; it can also threaten the survival of specimens interesting to mankind. The Catalina mahogany, *Cercocarpus traskiae*, is considered to be one of the rarest trees in the world; only about five specimens remain in the wild. In the Wrigley garden seedlings from Catalina mahogany, consistently show signs of hybridization with mountain mahogany, *C. betuloides* var. *blanchae*. Seedlings fail to retain the deeply veined leaves, with felty undersides, characteristic of Catalina mahogany. Vegetative propagation from cuttings seems to be the only way to maintain these features.

Devastation caused by plants and animals recently introduced to the islands has eliminated some plants entirely. Damage caused by overgrazing of feral goats and pigs will take centuries of care to repair. Buffalo and deer also thwart efforts at reclamation, but to a lesser degree. In the Wrigley Garden, young plants are protected by fences (called playpens) until of a size less vulnerable to grazing by deer. Nevertheless, a specimen of woody lettuce (*Munzothamnus blairii*), found on a high ledge in a canyon on San Clemente where it had escaped foraging goats, was brought to the garden only to be munched upon by determined deer.

Fennel (*Foeniculum vulgare*), benignly introduced to prevent erosion, is now a rampant weed; broom (*Cytisus linifolius*) and wild tobacco (*Nicotiana glauca*) are also choking out other plants.

In the face of enormous pressure from population growth, urban spread and industrial expansion, attempts to save scraps of the earth's vegetation seem insignificant and futile. Nevertheless attempts must be made and generations to come will be glad that, at the Wrigley Memorial Garden a few irreplacable examples were saved.

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